Hamidreza Almasi

U.S. Lawful Permanent Resident

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Summary

Accomplished software engineer and researcher with a robust background in developing scalable solutions across cloud infrastructure and machine learning systems. Maintains a keen focus on enhancing system performance and efficiency. Passionate about advancing communication optimization and performance analysis to drive innovation in computing.

Education

University of Illinois Chicago, USA. **Ph.D.,** Computer Science. CGPA: 4.00/4.00 — 2017–2023
- Thesis: Latency Optimization in Datacenters using Adaptive Transport and Reliable Training

Sharif University of Technology, Tehran, Iran. **M.Sc.,** Computer Eng. CGPA: 3.80/4.00 — 2013–2015
- Thesis: Traffic Management of Software-Defined Networks

University of Tehran, Tehran, Iran. **B.Sc.,** Electrical and Computer Eng. — 2008–2013
- Major: Information Technology Eng. Major GPA: 3.61/4.00

Software Proficiencies

Programming Languages: Python, C/C++, $P4_{16}$, Bash. Familiar with SQL, Swift, Processing, and Ivy
ML and HPC: PyTorch Distributed, Horovod, NVIDIA Nsight, NCCL, nvprof, Open MPI, BytePS, Slurm
Network Technologies: P4 Studio, ns-3, bmv2, RDMA, Wireshark, Mininet, Ryu, NetworkX
Cloud: AWS, Terraform, Kubernetes, Docker, Ansible
Misc.: Git, LaTeX, NumPy, Matplotlib, Seaborn, MATLAB

Professional Experience

Software Engineer, Sarmad Smart Solutions, Tehran, Iran. — 2017
- Developed an iOS mobile payment application for rental properties, enabling tenants and landlords to process transactions securely and efficiently, using Swift and integrating with various payment gateways.

Technical Expert, Aseman, Tehran, Iran. — 2016
- Developed a comprehensive technical master plan for the national deployment of IPTV/OTT services, covering infrastructure, scalability, and reliability.

Network Administrator, Towzin Electric Corp., Tehran, Iran. — 2009–2013
- Managed a network of around 200 end hosts and 15 application servers across geographically distributed sites throughout the country, ensuring reliable connectivity and minimizing downtime in a part-time role.

Publications

ICLR'24: Flag Aggregator: Scalable Distributed Training under Failures and Augmented Losses using Convex Optimization
INFOCOM'23: Protean: Adaptive Management of Shared-Memory in Datacenter Switches
HotNets'21: MTP: TCP is Harmful to In-Network Computing: Designing a Message Transport Protocol
IWQoS'21: Smartbuf: An Agile Memory Management for Shared-Memory Switches in Datacenters
LANMAN'19: Pulser: Fast Congestion Response using Explicit Incast Notifications for Datacenter Networks
COMSNETS'19: ICON: Incast Congestion Control using Packet Pacing in Datacenter Networks

Research Experience

AIOpt and BITS Labs, University of Illinois Chicago — 2017–2023
- Developed robust gradient aggregation for Byzantine fault tolerance in distributed deep learning systems.
- Created an agile buffer management system to absorb network traffic bursts in programmable switches.
- Designed a message transport protocol for reliable in-network computing with enhanced congestion control.
- Implemented rapid response to prevent incast congestion collapse in low latency datacenter networks.

Network Architectures and Protocols Lab, Sharif University of Technology — 2014–2015
- Proposed a framework for efficient network resource reservation by end host applications in SDNs through an API to the controller, enabling application-aware management for better traffic control and quality of service.

Teaching Experience

University of Illinois Chicago — 2018-2022
- Data Structures(×2), Introduction to Networking (×3), Database Systems

Sharif University of Technology — 2014–2015
- Computer Networks, Software Defined Networking, Wireless Networking, Adv Computer Networks, Data Comm

Community Service

Artifact Evaluation Committee: SOSP 2021
Reviewer: Journal of High Speed Networks 2020
Program Committee: IMC 2019
Organizer: ICNP 2019

Honors & Awards

Travel Grants: ANRW/IRTF 2023, SIGMETRICS 2019, NSDI 2018
Scholarship: Peter and Deborah Wexler Graduate Student Award — 2017